

USER MANUAL

Centaur Charger

12/20
12/30
12/40
12/50
12/60
12/80
12/100
12/200

24/16
24/30
24/40
24/60
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24/100

VICTRON ENERGY AT ANY TIME



victron energy

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1. Safety and regulatory information

General

- Review related documentation of this product to familiarize yourself with safety markings and instructions before you operate the equipment.
- This product has been designed and tested in accordance with international standards. Only use the equipment for the intended purpose of application.
- **WARNING: RISK OF ELECTRIC SHOCK.** The product is used in conjunction with a permanent energy source (battery). Even if the equipment is switched off, dangerous electrical voltages may appear at the in- and/or output terminals. Always disconnect AC power and battery before maintaining or servicing the product. A Ground Fault Circuit Interrupter (GFCI) must be installed in the AC supply circuit.
- There are no user-serviceable parts inside. Do not remove the front plate or operate the product without the front plate fitted. Refer all servicing to qualified personnel.
- Never use the product in locations where there is danger of gas- or dust explosions. Consult your supplier to ensure that the product is intended for use in conjunction with the battery. Always apply the battery manufacturer's safety instructions.
- Caution: never carry heavy loads without assistance.
- Explosive gases can be generated during charging of a lead-acid battery. Prevent open flame and sparks. Take care of sufficient ventilation during charging.
- Never try to recharge non-rechargeable batteries.
- A double-pole switch with a minimum contact distance of 3mm must be incorporated in the fixed mains input wiring of the installation.

Installation

- The installation of this product must be performed by qualified personnel.
- Always refer to the installation section in the operator's manual before applying power to the equipment.
- This is a Safety Class I product (provided with a protective earthing terminal). An uninterruptible safety earth ground must be provided at the AC in/output terminals. An additional grounding point is located at the outside of the product. Whenever it is likely that the grounding protection has been impaired, the product must be made inoperative and secured against any unintended operation; refer to qualified service personnel.
- Make sure that fuses and circuit breakers are provided in the connecting wires. Never replace a safety component by a different type. Consult the manual for determining the correct component.
- Make sure that all cables and wiring in the installation are anchored such that the conductors are relieved from strain and twisting.
- Before applying power, verify that the available power source matches the configuration settings of the product as described in the manual.
- Ensure that the environmental conditions are suitable for operation of the equipment. Never operate the product in a wet or in a dusty environment.
- Always allow enough free space around the product for ventilation and make sure that ventilation vents are not blocked.
- Be sure that the demanded power does not exceed the capacity of the product.
- This device is a continuous duty automatic charger for rechargeable open, sealed and gel lead acid batteries
- For supply connection use wires suitable for at least 75°C (167°F).
- CAUTION: Replace defective cords or wires immediately.

Transport and storage

- When storing or transporting the product make certain that mains power and battery leads are disconnected.
- No liability can be accepted for any transport damage when equipment is shipped in non-original packaging.
- Store the product in a dry location; storage temperature must be between -20°C and 60°C .
- Refer to the battery manufacturer manual concerning transport, storage, charging, recharging and disposal of the battery.

2. Description

Technology

The Centaur Charger is a fully high-frequency switched battery charger. The input is electronically power factor corrected by the first power stage.

The next stage gives provision for galvanic isolation and a perfect DC voltage at the output terminals.

The internal electronic parts are protected against moisture and dirt by means of a special coating, which assures a long lifetime of your battery charger.

Three high-capacity batteries can be charged simultaneously with this charger.

Operation

The battery charger charges the battery with 3-stage (Bulk-Absorption-Float) charging characteristic. It can remain connected to the battery continuously, without increased gas formation, caused by overcharging, taking place.

The charger can be used for different types of batteries but the default settings are for Gel batteries.

For use with other types of batteries please select Lead acid or AGM by opening front bottom cover and select dipswitch in bottom left hand corner. See Figure 1.

The full charging current of this Charger is divided in three main outputs but any one output can supply 100% of power if that is the only battery connected.

TROUBLESHOOTING

Problem	Possible cause	Solution
Charger does not function	The mains is not ok	Measure mains
	Input or output fuses are defective	Return product to your dealer
The battery does not get fully charged	A bad battery connection	Check battery connection
	The battery select switch is in wrong setting	Select correct battery type (see Fig1)
	Battery capacity too large	Make sure charger capacity matches battery
The battery is being overcharged	The battery select switch is wrong setting	Select correct battery type (see Fig1)
	A single cell in battery is defective	Replace battery
	Too small battery	Consult your battery supplier

3. Installation

WARNING: Qualified personnel only

Instructions

1. Mount wall bracket (for top holding) of the battery charger, make sure it is level.
2. Install three screws.
3. Open cover by removing four screws, on front bottom cover.
4. Put charger on mounting bracket and mark the Bottom of the two (M6-D-holes) mounting holes.
5. Install M6 screws.
6. Install AC cord to input terminal strip marked E, N, L, be sure to use the correct size wire (per ABYC regulations) to use for the input current marked on the label of charger.
7. Cut DC inlet plugs to cable size, then connect battery cables to DC lugs marked +DC & -DC. The -DC is used common for all three batteries. If there are less than three batteries, pick any +DC; all are capable of full current load. Select appropriate size wire (per ABYC regulations).
8. Select battery type by pushing the appropriate dipswitch at bottom left corner of board. Note: This unit is selected for GEL; if you change battery type DESELECT GEL, (See Figure 1).
9. Replace top cover and reinstall four screws on cover.
10. Apply power and verify Green Led is on (bottom left of PC board, look through bottom left air vents).



Location

The Centaur Charger must be installed in a dry, well-ventilated area.

Too high an ambient temperature has the consequence of lower output, shorter life or a complete shutdown of the Centaur Charger.

The Centaur Charger is suitable for floor and wall mounting.

However, for optimum cooling, a vertical position is recommended.

The cables between the Centaur Charger and the battery must be kept as short as possible to minimize cable losses. Input/output connections refer to Figure 1.

Required tools and cables

- M6 Socket driver.
- Crosshead screwdriver no. 2 Phillips.
- Battery cables: minimum cable cross-section

Model	Length 0 - 6 n
12/20 24/16	10 mm ² AWG 7
12/30 12/40 24/30 24/40	16 mm ² AWG 5
12/50 12/60 24/60	25 mm ² AWG 3
12/80 12/100 24/80 24/100	35 mm ² AWG 2
12/200	50 mm ² AWG 0

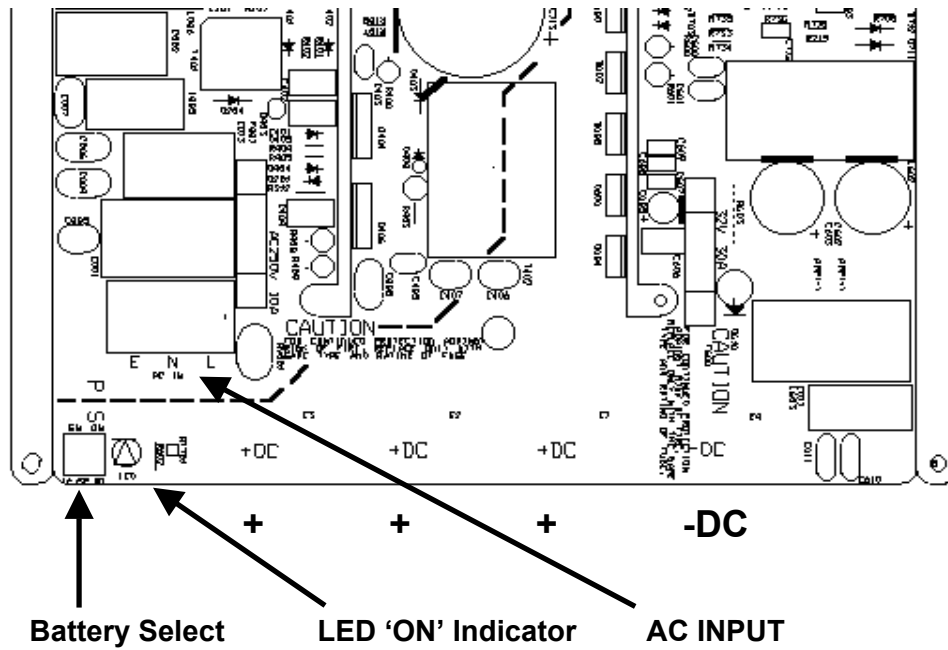
Cables longer than 6 m are not recommended.
 Cable eyes with M6/8 holes should be used.
 For supply connection use wires suitable for at least 75°C (167°F).

CAUTION: Replace defective cords or wires immediately.

Connection sequence

- Disconnect mains.
- Disconnect battery cables from the battery.
- Open front cover.
- Connect battery cables to the charger. Note that there's only one "minus"- Use a fuse according the size of the battery charger.
- Connect battery cables to the battery.
- Connect the AC-in by means of a 3-core cable of 2.5 – 4 mm² flexible core to the AC-in terminal block. Note that a real PE-connection is strictly necessary.
- Close the front panel.

Change voltage at appr. 10% of the nominal current				
	Absorption		Float	
	12V	24V	12V	24V
LA	14.5	29.0	13.5	27.0
AGM	14.3	28.6	13.3	26.6
GEL	14.2	28.4	13.5	27.0
Other	14.7	29.4	13.7	27.4



LA			

AGM			

GEL			

Other			

FIGURE 1 INPUT/ OUTPUT CONNECTIONS

Input Voltage vs. Input Current				
Model	Input Voltage (Vac)	Input Current (Aac)	Input Voltage (Vac)	Input Current (Aac)
12/20	120	3.35	240	1.75
12/30	120	4.35	240	2.30
12/40	120	6.40	240	3.20
12/50	120	8.00	240	4.00
12/60	120	9.55	240	4.75
12/80	120	12.0	240	6.00
12/100	120	15.0	240	8.00
12/200	120	30.0	240	15.0
24/16	120	4.75	240	2.50
24/30	120	9.00	240	4.55
24/40	120	10.0	240	6.00
24/60	120	15.0	240	9.00
24/80	120	20.0	240	12.0
24/100	120	25.0	240	15.0

Note:

For other input voltages U_{in} the input current can be calculated as follows:

Input current = (current at 120Vac) x ($120 / U_{in}$)

Example:

Input current at 120Vac: 3,35 Amps

Required: input current at $U_{in} = 110\text{Vac}$

Answer: input current = $3,35 \times (120 / 110) = 3,65 \text{ A}$

4. Specifications

Centaur Charger	12/20	12/30	12/40	12/60	12/80	12/100	12/160	12/200
	24/16			24/30	24/40	24/60	24/80	24/100
Common characteristics	Input voltage: 90 – 265 V			Input frequency: 45 – 60 Hz			Power factor: 1	
Charge voltage ‘absorption’ (V DC)	14,3 / 28,5 (1)							
Charge voltage ‘float’ (V DC)	13,5 / 27,0 (1)							
Output banks	3							
Charge current (A) (2)	20	30/ 16	40	60/ 30	80/ 40	100/ 60	160/ 80	200/ 100
Total output ammeter	Yes							
Charge characteristic	IUoU (Three stage charging)							
Recommended battery capacity (Ah)	80 – 200	120-300 45-150	160-400	240-600 120-300	320-800 160-400	400-1000 240-600	640-1600 320-800	800-2000 400-1000
Temperature sensor	Internal, - 2mV / °C (- 1mV / °F) per cell							
Forced cooling	Yes, temperature and current controlled fan							
Protection	Output short circuit, over temperature							
Operating temp. range	- 20 to 60°C (0 - 140°F)							
Ignition protected	Yes							
Humidity (non condensing)	max 95%							
ENCLOSURE								
Material & Colour	aluminium (blue RAL 5012)							
Battery-connection	M6 studs	M6 studs	M8 studs	M8 studs	M8 studs	M8 studs	M8 studs	M8 studs
AC-connection	screw-clamp 4 mm² (AWG 6)							
Protection category	IP 21							
Weight kg (lbs)	3,8 (8.4)	3,8 (8.4)	5 (11)	5 (11)	12 (26)	12 (26)	16 (35)	16 (35)
Dimensions hwxwd in mm (hwxwd in inches)	355x215 x110 (14.0x8.5 x4.3)	355x215 x110 (14.0x8.5 x4.3)	426x239 x135 (16.8x9.4 x5.3)	426x239 x135 (16.8x9.4 x5.3)	505x255 x130 (19.9x10.0 x5.2)	505x255 x130 (19.9x10.0 x5.2)	505x255 x230 (19.9x10.0 x9.1)	505x255 x230 (19.9x10.0 x9.1)
STANDARDS								
Safety	EN 60335-2-29, UL 1236							
Emission	EN 55014, EN 61000-3-2, EN 61000-3-3							
Immunity	EN 55014-2							

1) Standard setting.

Optimum charge/float voltages for Flooded Lead-acid, Gel-Cell or AGM batteries selectable by dip switch.

2) Up to 40 °C (100 °F) ambient.

Output will reduce to approximately 80 % of nominal at 50 °C (120 °F) and 60 % of nominal at 60 °C (140°F).

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